

## GPS & UTM Coordinates

### Plus Revised Orienteering Preparation

Due Date: well ... there isn't one. This is a tutorial; however, the skills acquired will be assessed on quizzes and the final exam.

#### OBJECTIVE

1. To develop proficiency using a handheld GPS unit for field navigation.
2. To be able to determine bearings and distances between two UTM coordinates.

#### ASSIGNMENT

##### **On Campus GPS Portion**

- Using the campus map, interpolate the UTM coordinates of your assigned waypoints
  - Enter waypoint coordinates into the attached table
- Determine the distance and bearing between your assigned waypoints using the formulas provided in class – double check your calculations (hand compass & map scale calculations). *Note, you will not be traversing between your waypoints – you are calculating distance and bearing to practice the procedure.*
- Enter waypoints into the GPS unit (follow directions on attached sheet)
- Working in your assigned groups, locate the waypoints on campus
  - Please note sources of uncertainty include :
    - the map (how well the points were plotted)
    - your interpolation calculation
    - GPS unit
  - Thus, once you navigate to your intended waypoint you will only be “close” to your target – likely the actual spot will be  $\pm 5$  m
  - Try to find the flagged waypoint without using the clues (if desperate, use clues)
  - Once you locate the waypoint, record the actual UTM coordinates and the code word in the attached table

##### **VIU Forest Orienteering Preparation**

- Enter your assigned photo locations (waypoints) into the GPS unit – use the “tree number” as the waypoint name
- Locate your assigned waypoints onto the VIU Forest map
- Determine the bearing and distance between your assigned waypoints
  - Using the photo (as before)
  - Using the formulas provided in class
  - Compare results

#### Waypoint Hints:

1) sign, 2) lamp-post, 3) fence, 8) lamp-post, 9) cedar, 10) bench, 11) handrail

### GPS Data Table

Way Point	Scaled from Map		Found in Field		
	Easting	Northing	Easting	Northing	Code Word

#### Station Assignments:

Crew 1: 3 → 2 → 1 → 8

Crew 2: 11 → 10 → 9 → 8

Crew 3: 1 → 3 → 2 → 11

Crew 4: 9 → 10 → 11 → 2

Crew 5: 8 → 1 → 11 → 3

Crew 6: 2 → 11 → 8 → 9

Crew 7: 10 → 9 → 1 → 3

#### GPS Reference

**Turn on the unit:** press and hold red light bulb; press Page to by-pass the legal disclaimer; the unit will now search for satellites. The unit will beep to indicate it cannot acquire enough satellites to establish your position –but you can still enter your waypoints while in the office. Press Enter to work with the unit with the GPS off.

**Creating a new waypoint:** to enter your waypoints manually follow the instructions on the attached page.

# VIU Forest Orienteering Exercise (revised)

Crew # \_\_\_\_\_

Name: \_\_\_\_\_

Assigned Location #	Est. Brg. Compass	Est. Brg. Formula	Est. Dist. Photo	Est. Dist. Formula
6 <sup>th</sup> location:				
5 <sup>th</sup> location:				
4 <sup>th</sup> location:				
3 <sup>rd</sup> location:				
2 <sup>nd</sup> location:				
1st location:				